

ODOR TRAP FOR A WATERLESS OR LOW-FLUSH URINAL

BACKGROUND OF THE INVENTION

1) Field of the Invention

[0001] The invention relates to an odor trap for a waterless or low-flush urinal, with a basin-shaped housing which is connected on an upper end to an inlet and on a lower end has an outlet that leads into a drain line. The trap has a siphon that prevents the passage of gas from the outlet to the inlet and also includes a scent insert.

2) Description of the Related Art

[0002] A similar odor trap of the prior art is disclosed in GB 2 356 565 A. In that case, the deodorizing insert, termed a deodorizing block, is located under a hood above the inlet. In this case, the hood acts as an anti-splatter protection and is open on the bottom. When a pool of urine forms above the inlet, the urine flows over and around the deodorizing block and is deodorized by the deodorizing block. One disadvantage of this odor trap is that the deodorizing block disintegrates rather quickly and in spite of the deodorizing block, it is still necessary to flush the urinal if an essentially deodorized room or area is required.

[0003] European Patent No. EP 1 247 910 A, owned by the applicant, describes an odor trap which is suitable for use in a waterless or low-flush urinal.

[0004] The object of the invention is to create an odor trap of the type described above in which the propagation of odor is prevented even more effectively.

BRIEF SUMMARY OF THE INVENTION

[0005] The invention teaches that this object can be achieved by an odor trap in which the deodorizing insert is located in an essentially dry area underneath the inlet.

[0006] In the odor trap claimed by the invention, the deodorizing insert is therefore not located above the inlet, but in an essentially dry area below the inlet. This arrangement has the significant advantage that the deodorizing insert is not exposed to a flow of liquid and can therefore be preserved for a significantly longer time. The odor trap claimed by the invention is therefore suitable in particular for use in a urinal in which there is a siphon insert which is replaced after a predetermined

length of time. Because the deodorizing insert in the odor trap claimed by the invention lasts for a relatively long time, it can be replaced simultaneously with the siphon insert.

[0007] An additional significant advantage of the odor trap claimed by the invention is that the fluid, as it rises in the siphon, is deodorized in the dry area of the deodorizing insert. Any air that does escape from the inlet is therefore deodorized and thus an undesirable propagation of the odor is largely prevented. The odor trap claimed by the invention is therefore particularly well suited for use in a waterless urinal.

[0008] In one development of the invention, the deodorizing insert is located in a replaceable siphon insert. When the siphon insert is replaced, it is thereby easily possible to replace the deodorizing insert at the same time. Basically, however, it is also possible to replace the deodorizing insert on its own. In that case, the siphon insert does not need to be removed from the housing.

[0009] In one development of the invention, the deodorizing insert sits on a screen. In this case, the air can flow over the deodorizing insert and can thereby be effectively deodorized.

[0010] In one development of the invention, the deodorizing insert is located underneath a cover and is held in place laterally by this cover. This arrangement results in a particularly simple installation. The deodorizing insert, which in this case is preferably a deodorizing block, is held in place by installing the cover. No additional fastening means are necessary for the deodorizing insert.

[0011] If, as in one additional development of the invention, there is a space for the passage of un-deodorized air between the deodorizing insert and the cover, a particularly intensive air circulation is possible, in which an intensive current of un-deodorized air flows around the deodorizing insert, which here again is also preferably a deodorizing block. The air is thereby deodorized by the deodorizing insert.

[0012] In one development of the invention, there is an inlet tube that extends downward below the insert. This inlet tube preferably empties below a screen and transports the urine into the siphon.

[0013] The propagation of odor can be prevented particularly effectively if, as in one development of the invention, backwater means are provided in the housing and are arranged so that they guide the undeodorized air to the deodorizing insert.

These backwater means are particularly effective if, as in one development of the invention, they are realized in the form of a diaphragm and are located on the lower end of the inlet tube. In one particularly simple realization of these backwater means, they are located on a screen. This screen simultaneously acts as a support for the deodorizing insert.

[0014] Additional advantageous features of the invention are described in the dependent claims, the following description and in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] One exemplary embodiment of the invention is explained in greater detail below with reference to the accompanying drawing, in which:

[0016] Figure 1 is a vertical section through an odor trap as claimed by the invention and through a section of a urinal basin, and

[0017] Figure 2 shows an odor trap of the type illustrated in Figure 1, but in the operating position.

DETAILED DESCRIPTION OF THE INVENTION

[0018] Figure 1 shows a lower section of a conventional urinal basin 2, which has an outlet in the form of a downward pipe 4. A collecting basin 3 is inserted in the urinal basin 2 from above, which collecting basin 3 has an inlet 6 in the lower portion, which is formed by at least one passage opening. Below the inlet 6, a cylindrical diaphragm 36 is molded onto the collecting basin 3. Concentric to this diaphragm 36, retaining means 45 are also molded onto the underside of the collecting basin 3, and are formed by a plurality of locking tabs. A cover 10 is fastened, e.g. locked, onto these retaining means 45.

[0019] An odor trap 1 is fastened to the pipe 4, by means of locking tabs, for example, which odor trap 1 has a housing 37 which accepts a siphon insert 17. Molded onto the base of the housing 37 is an outlet pipe 21, which is connected with a disposal line 22. The housing 37 is realized in particular in the form of a basin-shaped plastic housing.

[0020] The siphon insert 17 has a basin 18 on which an overflow pipe 38 is molded, which has an overflow edge 20 on its upper end. On one edge 39 of the basin 18 there is a dip tube 19, which has a plurality of passage openings in an upper encircling collar 14. A curved wall is located at some distance above the overflow edge 20 and is closed, as well as having a convex upward curvature. The above mentioned cover 10 is also locked onto the above mentioned edge 39. By

means of this cover 10, the basin 18 is fastened to the collecting basin 3 and is thus suspended on the basin.

[0021] A gasket 45 seals the upper edge of the basin 18 against the dip tube 19 and against the cover 10. A screen 16 is placed on the collar 14 from above. In the center, the screen 16 has a passage opening 41 (Figure 2), in which the inlet tube 7 is engaged by means of its mouth 9. The deodorizing insert 11 is placed on top of the screen 16. This deodorizing insert is realized in the shape of a ring and has a passage 13 in the middle, in which the inlet tube 7 is engaged. Inward-facing fins 10a are molded onto the cover 10 and hold the deodorizing insert 11 in position.

[0022] The siphon insert 17 forms a unit with the basin 18, the dip tube 19, the screen 16 and the deodorizing insert 11 as well as with the cover 10 and the collecting basin 3. This unit is inserted into the urinal basin 2 from above. A lip seal 42 seals the siphon insert 17 with respect to the urinal basin 2. The siphon insert 17 can easily be replaced at specified intervals. For this purpose, all that is necessary is to remove the used siphon insert 17 from the urinal basin 2 and to insert the new unit from above. This type of replacement can be carried out very easily and quickly.

[0023] The operation of the odor trap 1 described by the invention is explained in greater detail below with reference to the accompanying Figure 2.

[0024] In Figure 2, after the urinal has been used, there is a urine pool 23 in the collecting basin 3 that drains in the direction indicated by the arrows 25. At the mouth 9 of the inlet tube 7, the urine reaches the upwardly curved wall 40 and runs along said wall in the direction indicated by the arrow 26 to the passages 15 and through said passages into the basin 18. The urine travels in the direction indicated by the arrows 28 under the dip tube until it reaches the overflow edge 20. As it continues to ascend, the urine flows over the overflow edge 20 and as indicated by the arrows 30 and 31 reaches the outlet 21 and finally is discharged into the discharge line 22.

[0025] The urine pool 43 outside the dip tube 19 in the basin 18 has a ring-shaped surface 44, on which odors can develop. At least some of these odors penetrate upward through the passages 15. The backwater means 24, which are realized in the form of a diaphragm, cause this ascending odor to flow largely in the direction indicated by the arrows 33 into the passages 12 which are located between the deodorizing insert 11 and the cover 10. The odor is thereby conducted into the cover 10, in which the deodorizing insert 11 is located. Some of the air travels

through the circulation borings 8 that are located in the upper portion of the cover 10 back down through the inlet tube 7 and finally again in the direction indicated by the arrows 33 to the deodorizing insert 11. The odor is removed during this circulation. Deodorization is thereby ensured as a result of the above mentioned circulation in the cover 10, with the resulting guarantee that essentially no un-deodorized air can be released back into the environment. Because the deodorizing insert 11 is installed essentially dry in the odor trap 1, it will last for a long time. The deodorizing insert 11 can be in particular a solid body, such as a deodorizing block, for example. Basically, however, any other type of deodorizing inserts can also be used, which can also contain soft or liquid deodorizers.